INFO 4407
Database Design & Implementation

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URL: [http://homepages.cob.isu.edu/parkerkr/courses/INFO4407/](http://homepages.cob.isu.edu/parkerkr/courses/INFO4407/)

Prerequisite:
NFO 3307 and INFO/CS 1182

Textbook:
Database Management and Design, Allen, Hansen, Jackson, ([Section 1 link](link), [Section 2 link](link))

This course will use recent technology, so in order to do assignments at home you must have a computer capable of running Windows 10.

For class times, office hours, and textbooks, please see the online syllabus at the URL above.

Course Description

This course is designed to provide an overall understanding of the design and implementation of multi-user relational database management systems. Use of stored procedures, advanced SQL, transaction processing, and DBMS information assurance will be among the topics covered. Additional topics may include exploring alternatives to relational databases.

A database design and manipulation project will be undertaken using a database management system like MySQL or SQL Server in order to allow the student to develop a fuller understanding of database usage.

Topic List
Relational Database Design
Entity-Relationship Model
Normalization
Relational Algebra
SQL
Creating and Manipulating a Database
Transactions
Programming Applications
Stored Procedures & Triggers
Concurrency Control
Distributed Database Systems
Views
SQL Injection Attacks
Alternative Database Approaches
Course Objectives

- The student will be able to list and explain the fundamental concepts of a relational database system.
- The student will be able to utilize a wide range of features available in MySQL.
- The student will be able to analyze database requirements and determine the entities involved in the system and their relationship to one another.
- The student will be able to develop the logical design of the database using data modeling concepts such as entity-relationship diagrams.
- The student will be able to create a relational database using a relational database package.
- The student will be able to manipulate a database using SQL.
- The student will be able to assess the quality and ease of use of data modeling and diagramming tools.
- The student will be able to list and explain the fundamental concepts of triggers and stored procedures.
- The student will be able to define transactions in SQL.
- The student will be able to manipulate a database using PHP.
- The student will be able to assess the quality and ease of use of a real multi-user database.
- The student will develop interpersonal and leadership skills working as part of a systems development team in a group database design project.

Exams
You must have a 60% or higher average on class exams in order to be eligible to earn a C- or above grade for the course. In other words, unless you average a 60% or higher on the exams your course score will be at most a D.

Final Exam
The scheduled date for the final exam is shown on the online class schedule. You must take the exam on the scheduled date.

Make-Up Quizzes or Exams
No make-up exams or quizzes will be given, regardless of the reason for absence. Instead, a comprehensive exam will be given at the end of the semester to those students who have missed an earlier exam. The grade on the comprehensive exam will replace at most one zero score for a missed exam. It may be possible to make arrangements to take an exam early if there is a valid reason. In lieu of makeup quizzes, the lowest quiz grade will be dropped.

Assignments/Projects
Assignments and project deliverables that are not submitted on the due date will be subject to grading penalties of 20% per day. Assignments cannot be graded until all students have submitted their work, so prompt submission is essential. Once assignments have been graded, late submissions will not be accepted.

Group Project
Your course grade will depend heavily on a group project. In order to insure equal participation in the project each group member will be required to complete and submit a Peer Evaluation.

Peer Evaluation
Since work is not done individually, peer evaluations will be used. The members of your project team may not all receive the same project grade. While grades are assigned to the overall project, each individual's grade will be determined by weighting that project grade by the results of a confidential peer evaluation. Each team member will be required to assess the contributions of all members of the team with regard to the percentage contributed by each member toward the successful completion of all phases of the project, and the cumulative scores for each team member will be averaged.

Students must fill out and submit the peer evaluation form for each team member. Students who fail to submit evaluations may be assessed a penalty of one letter grade on their project score.

Extra Credit
No extra credit will be given. Therefore, it is important to begin the semester with the knowledge that exams and assignments will constitute your entire grade.

Policies & Procedures

Grade Distribution

<table>
<thead>
<tr>
<th>Grade</th>
<th>90.00 - 91.99</th>
<th>92.00 - 100.00</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
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<tr>
<td>B</td>
<td>80.00 - 81.99</td>
<td>82.00 - 87.99</td>
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<tr>
<td>C</td>
<td>70.00 - 71.99</td>
<td>72.00 - 77.99</td>
</tr>
<tr>
<td>D</td>
<td>60.00 - 61.99</td>
<td>62.00 - 67.99</td>
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<tr>
<td>F</td>
<td>00.00 - 59.99</td>
<td></td>
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Final Grade Determination

<table>
<thead>
<tr>
<th>Type</th>
<th>Points</th>
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</thead>
<tbody>
<tr>
<td>Project</td>
<td>40%</td>
</tr>
<tr>
<td>Exams</td>
<td>50%</td>
</tr>
<tr>
<td>Quizzes/Assignments</td>
<td>10%</td>
</tr>
</tbody>
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Moodle Grades
The Moodle calculation of your overall grade is only a close approximation, and should not be assumed to be your actual grade.
**Graduate Credit**
Students taking this course for graduate credit are required to do additional work in the form of substantive research and video presentation about a topic related to Emerging Topics in Database not covered in class.

**Academic Integrity**
Academic integrity is expected at Idaho State University and the College of Business. All forms of academic dishonesty, including cheating and plagiarism, are strictly prohibited, the penalties for which range up to permanent expulsion from the university with “Expulsion for Academic Dishonesty” noted on the student’s transcript. If you are unclear as to what constitutes academic dishonesty, read the College of Business Policy on Academic Integrity and the ISU Academic Integrity and Dishonesty Policy.

Some examples of dishonest behavior include, but are not limited to:
- Working on individual assignments with other students.
- Copying material from a source without attributing the source.
- Allowing another student to copy your work and then submit it as his/her own.
- Allowing someone else to complete your assignments for you and then passing off the work as your own.
- Bringing unauthorized material or devices to an exam. Note that you do not have to be caught using them – just having them is an offense.
- Copying from another student’s exam.
- Communicating with someone other than the professor during an exam.
- Removing the exam from the classroom.
- Acquiring exam or assignment answers or questions.
- Taking an exam for someone else or having someone take an exam for you.
- Performing any act designed to give unfair advantage to a student or the attempt to commit such acts.

**Professional Demeanor**
Part of receiving an education from a professional college is learning about your chosen field. Another part is learning to act like a member of that field. Professional Demeanor is in many ways the most important part of the learning process. How you act affects not only how others perceive you, but can also result in rewards or, alternatively, negative consequences. It will also affect your class grade.

The grade that you receive in this class will consist of two parts: the objective portion that is a calculated average of all assignments, quizzes, exams, etc., and a subjective portion that is based on your professional demeanor.

**Final Grade = Calculated Grade * PDM**
The professional demeanor multiplier (PDM) can range from 0.85 to 1.00, and will be multiplied by your calculated average. Students will be assigned a PDM of 1.00 unless behaviors are exhibited that signify unreadiness for the workforce.

Professional demeanor includes several subjective items such as attendance, punctuality, preparation, energetic and respectful participation in class, positive attitude, willing acceptance and completion of obligations, appropriate language, and respectfulness to other students and the professor, which includes listening interactively to classmates and the professor, and respecting others’ viewpoints.

Do not text, check social media sites, or eat meals during class. Do not leave class early unless prior arrangements have been made with the professor.

Some students enroll in a course already having experience in the subject area, and while contributions to discussions are welcomed, arrogance and unwillingness to learn or comply with professor directions will not be tolerated.

**Attendance**
Attendance in class is integral to the learning process. Students are expected to attend every class. Some material may only be covered in class and not made available on the course website. Students should notify their instructors by voicemail or email when they are absent from class.

Students are responsible for all material covered and announcements made within classes, even when absent from classes. Students should rely on classmates and online materials for any course content that is missed.

More than three absences may result in the reduction of one letter grade on the final grade. If a student misses the equivalent of three weeks or more of class, no credit may be received for the course. It is the student's responsibility to contact the professor to check on their status if more than three classes are missed.

Students are expected to remain for the entire duration of the class.

**Tardiness**
Students are expected to arrive for class and be in their seats by the scheduled beginning of class. Repeatedly coming to class late disrupts the teaching/learning environment in the classroom and adversely affects the other students in the class.

**Digital Device Policy**
Increasing numbers of students are using digital devices to take notes in class. To maintain an atmosphere conducive to learning in the classroom and to avoid distracting others set your device so that no audible signal can be heard.

Restrict use of digital devices to note taking or class-related web sites. Random browsing, social networking, playing games, and exchanging email are discouraged. If you engage in unauthorized communication or entertainment as described above you will be marked absent. Repeated violations of this policy will result in letter grade reductions.

If a guest speaker comes into the class, please give the person your full attention and close all digital devices.
ICS Facebook Page
The Informatics and Computer Science Facebook page can be joined at www.facebook.com/groups/5643817087/. The page is where we post major announcements as well as information about guest speakers and internships for Informatics and CS majors.

ACM Student Organization
There are both immediate benefits and long term benefits to getting involved in the student organization, including career preparation, networking, learning things not taught in class, and giving back to your fellow students. Visit http://www.facebook.com/groups/59810306279/ for the ICS ACM Student Organization Facebook page.

Reading Materials
Students are responsible for thoroughly reading the course syllabus and understanding its content.

Students are expected to read the assigned materials (textbooks or online notes) prior to the class day with which it is associated and to actively participate in class discussions. Unannounced quizzes may be given over reading assignments if students don't appear to be reading the material in advance.

Student Notification
All students are responsible for checking the web page and their email on a regular basis, preferably daily, for notification of any class scheduling changes or assignment clarification. Notice of quizzes or assignment clarifications may be posted late at night.

Instructor Availability
The instructor will be available during posted office hours, but additional efforts are made to increase accessibility to the students. While voicemail is an option, email is usually the most reliable means of contact. The instructor's email is checked throughout the day and often the student will get an immediate response to questions submitted by email.

Course Fees
Course fees are utilized to pay for lab assistants who can tutor, review work, explain concepts, assist in grading, and perform other duties to help students be successful in their classes.

Special Needs
Our program is committed to all students achieving their potential. If you have a disability (physical, hearing, vision, psychiatric, or learning disability) that may need a reasonable accommodation, please contact the ADA & Disabilities Resource Center located in the Rendezvous Complex, Room 125, 282-3599, as early as possible.

Closed Week Policy
Information about the ISU Closed Week Policy can be found online. Note that the policy does not prevent the presentation of new material during closed week.

Technology assistance
For technology assistance contact the Help desk at 282-4357 or http://help.isu.edu/

Tutorial assistance
Contact http://www.isu.edu/departments/university-tutoring to request a tutor.